

WHAT IS CLAIMED IS

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1. An information processing apparatus which causes a predetermined service providing apparatus which provides a predetermined service, to execute processing concerning a service providing request made by a  
10 terminal via a network, said information providing apparatus comprising:

a responding part which makes a response to said terminal asynchronously with respect to a completion of the processing which is caused to be  
15 executed by said service providing apparatus;

a processing state obtaining part which obtains a state of the processing concerning the service providing request, from said service providing part; and

a Web page generating part which, in response  
20 to a Web page display request made by said terminal, generates a Web page to display the state of processing which is obtained via said processing state obtaining part, and transmits the thus-produced Web page to said terminal.

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2. The information processing apparatus as  
claimed in claim 1, further comprising a processing  
information managing part which manages identification  
information of the processing concerning the service  
5 providing request,

wherein:

said responding part registers the  
identification information of the processing in said  
processing information managing part, and

10 said processing state obtaining part obtains  
the state of the processing for which the identification  
information is registered in said processing information  
managing part.

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3. The information processing apparatus as  
claimed in claim 1, wherein:

20 said processing information managing part  
further manages information concerning a position of the  
service providing apparatus which is caused to execute  
the processing concerning the service providing request,  
and information concerning a method for obtaining the  
25 state of the processing.

4. The information processing apparatus as claimed in claim 3, wherein:

said processing state obtaining part obtains the processing state from the service providing apparatus based on the information managed by said processing information managing part in response to a Web page display request made from said terminal.

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5. The information processing apparatus as claimed in claim 1, wherein:

said responding part causes the service providing apparatus to execute the processing by transmitting a request for execution of processing concerning the service providing request, to the service providing apparatus.

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6. The information processing apparatus as claimed in claim 5, wherein:

said responding part obtains information

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concerning a method for obtaining the processing state of the processing from the service providing apparatus as a response to the request for execution of the processing concerning the service providing request; and

5           said processing state obtaining part obtains the processing state based on the information concerning the method for obtaining the processing state obtained via the responding part.

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7. The information processing apparatus as claimed in claim 6, wherein:

15           in case a plurality of methods for obtaining the processing state obtained by the responding part are managed in the processing information managing part, said processing state obtaining part obtains the plurality of processing states based on the respective  
20 ones of the plurality of methods for obtaining the processing state.

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8. The information processing apparatus as claimed in claim 5, wherein:

said processing state obtaining part transmits a processing state sending request to a processing state providing apparatus which provides the processing state of processing which the service providing apparatus is caused to execute, and receives the processing state which is sent by the processing state providing apparatus in response to the processing state sending request.

9. The information processing apparatus as claimed in claim 5, further comprising a processing state receiving part receiving the processing state from the service providing apparatus,

wherein said Web page generating part generates a Web page displaying the processing state received via the processing state receiving part.

10. The information processing apparatus as claimed in claim 6, wherein:

said processing state obtaining part transmits a processing state sending request to the service providing apparatus, and receives the processing state sent from the service providing apparatus in response to the sending request.

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11. The information processing apparatus as claimed in claim 6, wherein:

the information concerning the method for obtaining the processing state comprises information concerning a position of a processing state providing apparatus which provides the processing state; and

said processing state obtaining part transmits a processing state sending request to the processing state providing apparatus specified by the position information, and receives the processing state sent by said processing state providing apparatus in response to the sending request.

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12. The information processing apparatus as claimed in claim 1, wherein:

said responding part causes the service providing apparatus to execute a plurality of processing units based on a single service providing request made by the terminal, provides a response to said terminal without waiting for respective completions of the plurality of processing units;

said processing state obtaining part obtains the respective processing states of the plurality of processing units; and

said Web page generating part generates a Web page displaying the states of the plurality of processing units obtained via said processing state obtaining part.

13. The information processing apparatus as claimed in claim 12, wherein:

said processing information managing part manages information concerning the position of the service providing apparatus which is caused to execute each of the plurality of processing units, the

information concerning the method for obtaining the processing state for each of the plurality of processing units, and also, request identification information assigning a common value for the plurality of processing  
5 units to be executed based on the common service providing request made by the terminal.

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14. The information processing apparatus as claimed in claim 13, wherein:

said processing state obtaining part identifies processing based on the common service  
15 providing request made by the terminal based on the above-mentioned request identification information, and, thus, obtains the respective processing states of the plurality of processing units based on the common service providing request based on the information  
20 managed by said processing information managing part.

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15. The information processing apparatus as

claimed in claim 12, wherein:

said responding part causes a plurality of  
respective service providing apparatuses to execute the  
respective ones of the plurality of processing units.

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16. The information processing apparatus as  
10 claimed in claim 12, wherein:

said Web page generating part generates the  
Web page displaying in an integration manner the  
respective processing states of the processing units  
based on the common service providing request obtained  
15 via the processing obtaining part.

20 17. The information processing apparatus as  
claimed in claim 1, wherein:

said Web page generating part generates a Web  
page in which the processing state is not displayed  
according to a request of the terminal.

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18. information processing apparatus as  
claimed in claim 1, further comprising a detailed  
information page generating part which generates a Web  
page displaying detailed information of the processing  
5 state in response to a request made by the terminal.

10 19. The information processing apparatus as  
claimed in claim 1, wherein:

said Web page generating part obtains  
predetermined information from a plurality of service  
providing apparatuses based on a request made by the  
15 terminal, and generates the Web page displaying the  
obtained information in respective ones of a plurality  
of divisional areas of the page.

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20. The information processing apparatus as  
claimed in claim 19, further comprising a page  
information managing part which manages a structure  
25 defining display contents with eXtensible Markup

Language for respective ones of the plurality of  
divisional areas of the Web page for each user,  
wherein said Web page generating part  
generates the Web page based on the structure.

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21. The information processing apparatus as  
10 claimed in claim 20, wherein:

said Web page generating part generates the  
Web page in a manner such that the processing state of  
the processing concerning the service providing request  
is displayed in one of the plurality of divisional areas.

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22. An information processing method for an  
20 information processing apparatus which causes a  
predetermined service providing apparatus which provides  
a predetermined service, to executes processing  
concerning a service providing request made by a  
terminal via a network, said information providing  
25 method comprising:

a responding step of making a response to said terminal asynchronously with respect to a completion of the processing which is caused to be executed by said service providing apparatus;

5           a processing state obtaining step of obtaining a state of the processing concerning the service providing request, from said service providing part; and

          a Web page generating step of, in response to a Web page display request made by said terminal,  
10       generating a Web page to display the state of processing which is obtained in said processing state obtaining step, and transmitting the thus-produced Web page to said terminal.

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23. The information processing method as claimed in claim 22,

20           wherein:

          said responding step comprises a step of registering identification information of the processing in a processing information managing part managing identification information of the processing concerning  
25       the service providing request, and

said processing state obtaining step comprises  
a step of obtaining the state of the processing for  
which the identification information is registered in  
said processing information managing part.

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24. The information processing method as  
10 claimed in claim 23, wherein:

said processing information managing part  
further manages information concerning a position of the  
service providing apparatus which is caused to execute  
the processing concerning the service providing request,  
15 and information concerning a method for obtaining the  
state of the processing.

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25. The information processing method as  
claimed in claim 24, wherein:

said processing state obtaining step comprises  
a step of obtaining the processing state from the  
25 service providing apparatus based on the information

managed by said processing information managing part in response to the Web page display request made from said terminal.

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26. The information processing method as claimed in claim 22, wherein:

10       said responding step comprises a step of causing the service providing apparatus to execute the processing, by transmitting a request for execution of processing concerning the service providing request, to the service providing apparatus.

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27. The information processing method as claimed in claim 26, wherein:

20       said responding step comprises a step of obtaining information concerning a method for obtaining the processing state of the processing from the service providing apparatus as a response to the request for  
25       execution of processing concerning the service providing

request; and

said processing state obtaining step comprises  
a step of obtaining the processing state based on the  
information concerning the method for obtaining the  
5 processing state obtained in the responding step.

10 28. The information processing method as  
claimed in claim 27, wherein:

said processing state obtaining step comprises  
a step of, in case a plurality of methods for obtaining  
the processing state obtained in the responding step are  
15 managed by the processing information managing part,  
obtaining the plurality of processing states based on  
the respective ones of the plurality of methods for  
obtaining the processing state.

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29. The information processing method as  
claimed in claim 26, wherein:

25 said processing state obtaining step comprises

a step of transmitting a processing state sending  
request to a processing state providing apparatus which  
provides the processing state of processing which the  
service providing apparatus is caused to execute, and  
5 receiving the processing state which is sent by the  
processing state providing apparatus in response to the  
processing state sending request.

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30. The information processing method as  
claimed in claim 26, further comprising a processing  
state receiving step of receiving the processing state  
15 from the service providing apparatus,

wherein said Web page generating step  
comprises a step of generating a Web page displaying the  
processing state received in the processing state  
receiving step.

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31. The information processing method as  
25 claimed in claim 27, wherein:

said processing state obtaining step comprises  
a step of transmitting a processing state sending  
request to the service providing apparatus, and  
receiving the processing state sent from the service  
5 providing apparatus in response to the sending request.

10 32. The information processing method as  
claimed in claim 27, wherein:

the information concerning the method for  
obtaining the processing state comprises information  
concerning a position of the processing state providing  
15 apparatus which provides the processing state; and

said processing state obtaining step comprises  
a step of transmitting a processing state sending  
request to the processing state providing apparatus  
specified by the position information, and receiving the  
20 processing state sent by said processing state providing  
apparatus in response to the sending request.

33. The information processing method as claimed in claim 22, wherein:

said responding step comprises a step of causing the service providing apparatus to execute a plurality of processing units based on a single service providing request made by the terminal, providing a response to said terminal without waiting for respective completions of the plurality of processing units;

said processing state obtaining step comprises a step of obtaining the respective processing states of the plurality of processing units; and

said Web page generating step comprises a step of generating the Web page displaying the states of the plurality of processing units obtained in said processing state obtaining step.

34. The information processing method as claimed in claim 33, wherein:

said processing information managing part manages information concerning the position of the service providing apparatus which is caused to execute each of the plurality of processing units, the

information concerning the method for obtaining the  
processing state for each of the plurality of processing  
units, and also, requested identification information  
assigning a common value for the plurality of processing  
5 units to be executed based on the common service  
providing request made by the terminal.

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35. The information processing method as  
claimed in claim 34, wherein:

said processing state obtaining step comprises  
a step of identifying processing based on the common  
15 service providing request made by the terminal based on  
the above-mentioned requested identification information,  
and, thus, obtaining the respective processing states of  
the plurality of processing units based on the common  
service providing request based on the information  
20 managed by said processing information managing part.

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36. The information processing method as

claimed in claim 33, wherein:

said responding step comprises a step of  
causing a plurality of respective service providing  
apparatuses to execute the respective ones of the  
5 plurality of processing units.

10 37. The information processing method as  
claimed in claim 33, wherein:

said Web page generating step comprises a step  
of generating the Web page displaying in an integration  
manner the respective processing states of the  
15 processing units based on the common service providing  
request obtained in the processing obtaining step.

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38. The information processing method as  
claimed in claim 22, wherein:

said Web page generating step comprises a step  
of generating a Web page in which the processing state  
25 is not displayed according to a request of the terminal.

39. information processing method as claimed  
in claim 22, further comprising a detailed information  
page generating step of generating a Web page displaying  
detailed information of the processing state in response  
5 to a request made by the terminal.

10 40. The information processing method as  
claimed in claim 22, wherein:

said Web page generating step comprises a step  
of obtaining predetermined information from a plurality  
of service providing apparatuses based on a request made  
15 by the terminal, and generating the Web page displaying  
the obtained information in respective ones of a  
plurality of divisional areas of the page.

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41. The information processing method as  
claimed in claim 40, further comprising a page  
information managing step of managing a structure  
25 defining display contents with eXtensible Markup

Language for respective ones of the plurality of  
divisional areas of the Web page for each user,

wherein said Web page generating step  
comprises a step of generating Web page based on the  
5 structure.

10 42. The information processing method as  
claimed in claim 40, wherein:

said Web page generating step comprises a step  
of generating the Web page in a manner such that the  
processing state of the processing concerning the  
15 service providing request is displayed in one of the  
plurality of divisional areas.

20 43. An information processing program causing  
an information processing apparatus which causes a  
predetermined service providing apparatus which provides  
a predetermined service, to executes processing  
25 concerning a service providing request made by a

terminal via a network, to perform:

a responding step of making a response to said terminal asynchronously with respect to a completion of the processing which is caused to be executed by said

5 service providing apparatus;

a processing state obtaining step of obtaining a state of the processing concerning the service providing request, from said service providing part; and

a Web page generating step of, in response to  
10 a Web page display request made by said terminal, generating a Web page to display the state of processing which is obtained in said processing state obtaining step, and transmitting the thus-produced Web page to said terminal.

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44. The information processing program as  
20 claimed in claim 43, wherein:

said responding step comprises a step of causing the service providing apparatus to execute the processing, by transmitting a request for execution of processing concerning the service providing request, to  
25 the service providing apparatus.

45. A computer readable recording medium storing therein the information processing program claimed in claim 43.

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46. A computer readable recording medium storing therein the information processing program  
10 claimed in claim 44.

15 47. A service providing apparatus which executes processing concerning the service providing request sent from the information processing apparatus claimed in claim 1, comprising:

a processing state obtaining information  
20 sending part sending, to the information processing apparatus, processing state obtaining information which enables obtaining a completion notification and a processing state of the processing, before the completion of the processing,

25 wherein, in response to an obtaining request

made by the information processing apparatus requesting  
the processing state of the processing concerning the  
service providing request based on the processing state  
obtaining information, the service providing apparatus  
5 sends the processing state of the processing to the  
information processing apparatus.

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48. The service providing apparatus as  
claimed in claim 47, wherein:

the processing state obtaining information  
comprises information which enables, for the information  
15 processing apparatus, obtaining the processing state of  
the processing which is executed by another service  
providing apparatus.

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49. The service providing apparatus as  
claimed in claim 47, wherein:

the processing state obtaining information  
25 sending part sends the processing state obtaining

information in a form of a structure in which the processing state obtaining information is described with eXtensible Markup Language as an element thereof.

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50. The service providing apparatus as claimed in claim 49, wherein:

10           said processing state obtaining information comprises identification information for identifying the processing concerning the service providing request and information concerning a method for obtaining the processing state of the processing executed by the  
15   service providing apparatus.

20           51. A service providing method for a service providing apparatus which executes processing concerning the service providing requested sent from the information processing apparatus claimed in claim 1, comprising:

25           a processing state obtaining information

sending step of sending, to the information processing apparatus, processing state obtaining information which enables obtaining a completion notification and a processing state of the processing, before the

5 completion of the processing; and

a processing state sending step of, in response to an obtaining request made by the information processing apparatus requesting the processing state of the processing concerning the service providing request  
10 based on the processing state obtaining information, sending the processing state of the processing to the information processing apparatus.

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52. The service providing method as claimed in claim 51, wherein:

the processing state obtaining information  
20 comprises information which enables obtaining, for the information processing apparatus, the processing state of the processing executed by another service providing apparatus.

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53. The service providing method as claimed  
in claim 51, wherein:

the processing state obtaining information  
sending step comprises a step of sending the processing  
5 state obtaining information in a form of a structure in  
which the processing state obtaining information is  
described with eXtensible Markup Language as an element  
thereof.

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54. The service providing method as claimed  
in claim 53, wherein:

15 said structure comprises identification  
information for identifying the processing concerning  
the service providing request and information concerning  
a method for obtaining the processing state of the  
processing executed by the service providing apparatus.

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55. A service providing program for causing a  
25 service providing apparatus which executes processing

concerning the service providing request made by the information processing apparatus claimed in claim 1, to perform:

- 5       a processing state obtaining information sending step of sending, to the information processing apparatus, processing state obtaining information which enables obtaining a completion notification and a processing state of the processing, before the completion of the processing; and
- 10       a processing state sending step of, in response to an obtaining request made by the information processing apparatus requesting the processing state of the processing concerning the service providing request based on the processing state obtaining information,
- 15       sending the processing state of the processing to the information processing apparatus..

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56. A computer readable recording medium storing therein the service providing program claimed in claim 55.